Benjamin A. Elman, *A Cultural History of Modern Science in China*, Cambridge, Massachusetts, London, England: Harvard University Press, 2006, 336 pp.

Angelika C. Messner

[Angelika C. Messner is a professor of Chinese at the University of Kiel. She is a historian of Chinese science whose research focuses on medical knowledge and practices in late imperial China as well as in contemporary China. Her current collaborative research with colleagues and students from Zhejiang University concerns the problem of "being-in-the world" in different epistemological frames. Contact: messner@sino.uni-kiel.de]

Everybody who wants to understand what 'science' signifies in present-day China, cannot but look back into historical Chinese contexts. This is the way Benjamin Elman establishes the ground for his painstaking studies in the field of the history of science in China. Certainly, since the first volume of *Science and Civilization in China* by Joseph Needham was published in 1954, the number of monographs, anthologies and textbooks dealing with history of science and technology in China has increased immensely. East Asian and Western scholars have produced a large number of studies on various fields of knowledge—book making, mechanics, astronomy, medicine, geography, mining and many other domains have been scrutinized in detail. However, most of these studies remain somehow remote in their scope, since they often present a very small snapshot of a time and place. Although this micro-perspective approach is foundational in a field which had been unexplored so far, and these specific studies all together are foundational for further research, they are nevertheless only rarely to be found in libraries with general historical holdings.

Joseph Needham's huge contributions in turn are widely known by name, but only rarely read by a broader readership outside of the scholars in the field.

This is the big deficit in general knowledge regarding Chinese science and technology that Benjamin Elman aims at correcting with *A Cultural History of Modern Science in China.*

With this book Elman offers first of all a short yet nevertheless insightful introduction into the coherences of the history of science and technology in Chinese contexts beginning from 1550 and ending in 1900. Therefore, his perspective differs from previous views that had stressed a rupture in active knowledge production in the Chinese eighteenth century.

Elman already had established new grounds for looking at these coherences in his *On Their Own Terms: Science in China, 1550-1900*, published in 2006. *On Their Own Terms* provides abundant evidence for the

history of science in China not being interrupted between the eighteenth and early nineteenth century. In doing so, he opened up a new trajectory for historians to track lines of knowledge production, and countered the longstanding meta-narrative that basically divided late imperial science and technology history into two time blocks: first, the period from the early 1600's until 1773, which reflects the working period of the Jesuits Astronomical Bureau of the imperial court; secondly, the time block beginning in the early nineteenth century and ending roughly in the 1920s, reflecting largely Protestant activities.

Offering vivid insights into the intense activities regarding 'investigation of things' by late Ming literati (sixteenth century) *via* collecting things, artifacts, utensils and odd phenomena as well as *via* describing, systematizing and ordering these things conceptually within encyclopedic collections for 'everyday use,' Elman furthermore dwells on theories of cosmology and natural change that had been present at the time when the Jesuits offered their views on mathematics, statecraft and Christianity. Focusing on the many interactions with Jesuit perspectives on mathematics, astronomy and medicine, Elman provides evidence for intense exchange that was not entirely new at the time, since it had been preceded by knowledge about the 'Old World' *via* Islam in Central Asia and Persia for centuries prior to this.

Later in the eighteenth century, when the Jesuit presence in China ceased, Chinese literati turned to extensively recovering, collecting and publishing books and encyclopedias according to new classifications of learning. Hand in hand with the discovery of their ancient masters in mathematics and medicine, Chinese scholars at the time were intensively engaged in evidential studies based on philological methods.

Elman painstakingly tracks the lines of coincidences also for the early nineteenth century, when Protestant missionaries, in particular following the Opium Wars in the 1840s, started to establish translating and publishing activities in Shanghai and in Guangzhou. He meticulously traces the different aspects of science that were stressed in the joint translations into Chinese by the Christian missionaries on one side and those stressed by Chinese literati on the other. Dwelling on the extensive primary source material that was produced in the Chinese translation bureau in Shanghai after the 1870s, Elman tracks the various fields of science that were introduced by the many primers on 'modern' geography and geology, botany, physiology and evolution, political economy etc.

Such detailed accounts are to be found mainly in *On their Own Terms* and to a lesser amount in *A Cultural History of Modern Science in China.* But the latter convincingly shows the main lines that shaped the sustained creative dialogues between Western and Chinese knowledge domains. In

this regard he shows that Protestant initiatives to introduce European and North American political and cultural institutions from the early to late nineteenth century built on earlier Jesuit geographies of the world and descriptions of European countries. Moreover, he adjusts the conventional picture of China as irrevocably weak and backward in contrast to a strong and powerful Europe and Japan from around 1865 to 1895 as wrong, showing that this picture is a relic of the effects of the Sino-Japanese war of 1895.

These insights suffice to feed students of general world history, who are supposed to learn about coherent histories of knowledge and science in the Chinese context that at least since the 1550s was a joint history between Western scholars and Chinese scholars. This book, however, does not satisfy students who know Chinese and want to get access to the Chinese world beyond their dialogues with Jesuit and Protestant perspectives.